عنوان مقاله:

Designing a polytopic complex vaccine candidate against Gallibacterium anatis : an In-silico study

محل انتشار:

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خلاصه مقاله:

The haemolytic biovar of Gallibacterium anatis (G. anatis) is responsible for urogenital, gastrointestinal, and respiratory diseases in chickens. There are numerous reports on the resistance of G. anatis to antibiotics and recurrence of the disease, which raise concerns about antimicrobial treatment efficiency. Vaccination has been considered as the most feasible procedure of prevention in high risk farms. Subunit vaccines containing immunogenic components can have practical protective value in preventive measures regarding the infection. The present study aimed to introduce a polytopic vaccine candidate based on epitope detection. All registered sequences of four immunogenic proteins, includig Flfa, GTxA, Gab_۱۳۰۹, and Gab_۲۳۴۸ were retrieved and directed for variational analysis. A vaccine isolate was selected for each protein and tested for B-cell epitope mapping using different tools. Furthermore, consensus selected immunogenic regions with special patterns fused together by flexible linkers were integrated into two constructs and checked for the best status of proteasomal cleavage sites, as well as hydropathy plot. Moreover, back translations, along with codon optimization were performed, and then some tags were added to the constructs. The selected consensus B-cell immunogenic epitopes were for ۱۲۶۵۶: AA۱۱۴-۱۸۱, ۷۹۹۰: AA۱۱۴-۱۸۱, Avicor: AA۴۲-۷۷, ۱۳۴-۱۹۷, and IPDH: ۶۱-۱۵۵ for Flfa protein, AA۱۸۵-۲۳۵, AA۳۷۲-۴۵۷, and AA۸۰۷-۹۴۱ for GtxA-N, AA۲۶۰-۳۰۵, AA۳۴۰-۴۰۰, and AA۱۱۰-۱۴۶ for Gab-۱۳۰۹, and AA۱۲۵-AA۱۷۵ for Gab-۲۳۴۸. Two suitable patterns of attachment were selected from the different fusion patterns of epitopes in B-cell polytopic vaccinal constructs. Finally, the examination of these constructs showed their effect and efficacy for immune system stimulation. Based on bioinformatics results, these immunogens could be utilized as potential candidates to develop polytopic protective vaccines and design diagnostic kits.

کلمات کلیدی:

Gallibacterium anatis, vaccine, Polytopic, In-silico

لینک ثابت مقاله در پایگاه سیویلیکا: